

Research Mentor Training: Initiatives of the University of Wisconsin Institute for Clinical and Translational Research

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The University of Wisconsin-Madison (UW) has served as a hub of multidisciplinary expertise in both research mentor and mentee training and evaluation, with long-standing, federally funded efforts to support innovative practice, training interventions, and research to improve training programs for diverse scholars in science, technology, engineering, mathematics, and medicine (STEMM). Ten years ago, the Wisconsin Program for Scientific Teaching, codirected by Drs. Pfund, Miller, and Handelsman, led an effort to train future biology faculty to become more effective research mentors. Cohorts of biology graduate students, postdoctoral trainees, faculty, and staff met to discuss mentoring challenges and solutions, generating case studies and discussion questions along the way. Following evaluation and revision, these materials were published as *Entering Mentoring*,¹ a manual to help others facilitate research mentor training seminars and workshops. Published evaluations of the *Entering Mentoring* seminars indicate that mentors who participate in training gain important skills.² These trained mentors are more likely to consider issues of diversity, discuss expectations with their mentees, and to seek the advice of their peers. *Entering Mentoring*, since adapted to create nine different curricula that target specific STEM disciplines, has subsequently been used across the country to train hundreds of research mentors. All of these developed materials have been field-tested at UW in the Center for the Integration of Research, Teaching, and Learning (CIRTL, PI: Robert Mathieu) and are available at no charge on the project Website (<http://www.researchmentortraining.org>). *Entering Mentoring* has served as a foundation and framework for the Clinical and Translational Science Award (CTSA)-funded initiatives of the UW Institute for Clinical and Translational Research (ICTR).

In 2010, a multidisciplinary team from five CTSA-funded institutions, supported by a CTSA Administrative Supplement awarded UW, sought to adapt *Entering Mentoring* to make it applicable for the mentors of clinical and translational researchers. Over a 6-month period, the curriculum team outlined, reviewed, and adapted learning objectives and core training activities to address six research mentoring competencies: (1) maintaining effective communication; (2) aligning expectations; (3) assessing understanding; (4) addressing diversity; (5) fostering independence; and (6) promoting professional development.³ Further adaptations and beta-testing followed, with the final curriculum published as *Mentor Training for Clinical and Translational Researchers*.⁴ Using this curriculum, as designed, allows small groups of mentors to engage in a discussion of case studies and activities intended to help them meet specific learning objectives, set forth for each of the six competencies. The

curriculum is typically implemented in four 2-hour sessions, led by two trained facilitators.

*The Mentor Training for Clinical and Translational Researchers*⁴ curriculum was evaluated in a randomized controlled trial conducted at 16 US institutions (15 CTSA sites), between January 2010 and July 2011. A total of 283 mentor-mentee pairs were recruited, with 98% retention of participants through the trial. Mentors were allocated to the 8-hour training group ($n = 144$) or to the control group ($n = 139$). We hypothesized that this systematic, formal mentor training strategy would improve mentoring skills across the six core curriculum competencies, and positively influence behaviors. Baseline and 6 month postrandomization interviews were conducted using the validated Mentoring Competency Assessment (MCA) tool⁵, newly developed for this trial. Follow-up surveys of mentors, who received training, documented statistically significant self-reported skill gains and self-reported changes in mentoring behaviors.⁶ In addition, interviewed mentees corroborated these positive changes.

With this documented success, the most recent research mentor training initiative at UW, funded by a CTSA supplement, has been creation of a Web-based Legacy Resource for mentoring development, which has been established to serve national and international mentors and mentees by dissemination of resources, most notably research mentor training curricula (<https://mentoringresources.ictr.wisc.edu/>). This Website provides information on best mentoring practices, as well as access to mentor training curricula, such as *Mentor Training for Clinical and Translational Researchers*⁴. The Website also offers facilitator training materials, assessment instruments, and centralized data collection for the evaluation of mentoring relationships and mentor training efforts, thus creating a mechanism for ongoing evaluation. Development of the new Website consisted of three phases: (1) assembling and testing three new specialized curricula; (2) developing the Web-based resources, and (3) integrating the assessment mechanism into the Website.

Phase 1: Assembling and Testing Specialized Curricula

Using *Mentor Training for Clinical and Translational Researchers*⁴ as a template, teams of four to eight researchers from multiple CTSA-sites adapted three specialized versions of this curriculum for mentors in (1) biomedical research, (2) clinical and behavioral research, and (3) community-engagement research. Each curriculum was reviewed by researchers within those areas and the feedback integrated. The resulting curricula were then beta-tested with one or more groups of mentors at partner institutions. UW team members traveled to each beta-test site, trained facilitators at those sites, supported implementation and

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Figure 1. Legacy Website for Research Monitoring. The monitoring project has been fully implemented and includes a new Website linked to the UW ICTR Web portal. A screen shot of the opening page of the Website is displayed.



evaluated the effectiveness of the training. Results from beta-testing indicate high levels of satisfaction among participants across all four beta-test sites. Feedback from the beta sites is currently being incorporated into each of the three specialized versions and the finalized curricula will be posted on the Legacy Website in 2013.

Phase 2: Developing the Web-Based Resource

To more widely disseminate the research mentor training curricula and encourage its broad implementation, the UW ICTR team (<https://mentoringresources.ictr.wisc.edu/Acknowledgements>) developed a Web-based legacy resource to share the complete curricula, and allow users to create a custom-designed derivative of the curriculum for their own training efforts. The Website (Figure 1) enables ICTR to collect data from the users who implement the training, and outcomes from the mentors who participate in the training, thereby creating a centralized data collection point for broad and comprehensive analysis. A central goal is to provide critical information and services in an easily accessible and useful manner to Website users.

The Legacy Website runs in a high-availability environment; in case of a computer system or network failure, the system defaults to a backup system and remains available. Managed by the ICTR Web Portal team, the Website has an existing secure, authenticated portal, which allows effective utilization of this mentoring resource.

The completed version of the Website went live on March 15, 2013. ICTR team members early realized the Website could be more comprehensive than originally planned, and added new components. These include a range of supplementary resources for mentors and mentees interested in improving mentoring relationships, including information on best mentoring practices, an annotated bibliography, and links to resources, such as mentoring agreements and individual development plans. Usability testing of the site is under way and improvements to the live site will continue in response to user feedback.

Phase 3: Integrating the Assessment Mechanism

In exchange for free access to the mentor training curricula, users are required to register before downloading the materials, and are invited to use specified evaluation instruments; these include a facilitator usability survey and pre- and posttraining assessments for mentors and their mentees. The validated existing pre- and post 26-item MCA⁵ is included in these assessments and used to assess gains in mentoring skills. The MCA is accompanied by questions about mentors' professional backgrounds, years of mentoring experience, demographics, training satisfaction, and reported changes in mentoring practices. Also available is a corresponding tool that allows mentees to assess their mentors' skill on the same scale. The data allows the research team to make comparisons to the randomized-controlled trial data, further refine the curricula as needed, and perform additional validation studies on the MCA.

The assessment mechanism has been pilot tested using the Legacy Website links at four sites where the specialized curricula were beta-tested. Preliminary analysis from the test sites indicates satisfactory levels of variation across respondents in the pretest. Analyses conducted six months posttraining will determine if participants report similar learning gains across the beta-test sites. Additional data is expected from mentors who participate in mentor training at additional beta-test sites in 2013.

Plans for sustainability

UW ICTR is committed to sustaining this Web-based Legacy Resource, with plans to continue collection and analysis of implementation data from a diverse cross-section of training venues across the country. As the curricula are implemented nationally and the data set expands, future enhancements can be added to the specialized curricula materials. Plans are under way to train more facilitators at UW and national venues. Funding from an R13 grant from the NIH National Institute of General Medical Sciences titled, "Facilitator Training to Disseminate Research Mentor Training for Diverse Scholars" (Co-PIs Christine Pfund and Christine Sorkness, University of Wisconsin-Madison) will provide resources to train 120 additional facilitators across the country over the next 12 months. The R13 funding for these train-the-trainer workshops is intended to promote wider dissemination of these evidence-based curricula to train faculty and staff to confidently implement research mentor training for their constituents, in particular mentors of minority scholars. The Legacy Resource will thus serve as a complimentary, long-

term resource to CTSA programs across the country for both implementation and research on mentorship development.

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